

REMARKS

Claims 1, 3-11, 14, and 42-49 were pending. Claims 42-45 and 47-48 have been amended. Claims 50-51 have been added.

Claims 1, 3-11, 14, and 42-49 were rejected as anticipated by SUZUKI et al. 6,780,757 and claims 42-49 were further rejected as unpatentable over SUZUKI et al. The claims have been amended and reconsideration and withdrawal of the rejections are respectfully requested.

Claim 1 includes a lower copper layer closer to the semiconductor substrate than the upper copper layer. The Official Action points to element 16 (left side) for this feature. However, element 16 is a tungsten interconnection that includes Ti film 13, TiN film 14 and tungsten film 15 (column 6, lines 1-5). Element 16 is not a copper film and does not meet this claim limitation. Accordingly, claim 1 and claims 3-11 and 14 that depend therefrom avoid the rejection under §102.

While SUZUKI et al. disclose lower and upper layers that include copper (layer 26 includes Al-Si-Cu layer 23 and layer 35 includes Al-Si-Cu layer 33), the reference does not disclose that the copper area ratio of the lower layer under the bonding pad is lower than that of the upper layer; they appear to be the same.

New claim 50 also depends from claim 1 and is allowable because the reference does not disclose or suggest that the upper copper layer is separated from the lower surface of the bonding

pad only by the barrier metal. In SUZUKI et al., the "upper" Al-Si-Cu layer 23 (part of layer 26, see Figure 9 and column 7, lines 9-25) is separated from the lower surface of the bonding pad 37 by numerous layers (Figure 17).

Claim 42 has been amended and provides that the upper copper layer (e.g., 100 in Figure 2A of the present application) is formed in the bonding region above the internal circuit region and under the bonding pad in electrical contact therewith, and that one of the copper interconnect layers (e.g., 210, 220 in Figure 4B) at the first level is elongated from the internal circuit region to the bonding region under the upper copper layer in electrical isolation therefrom.

SUZUKI et al. disclose lower and upper layers that include copper (layer 26 includes Al-Si-Cu layer 23 and layer 35 includes Al-Si-Cu layer 33), but do not disclose that the lower one of these is electrically isolated from the upper one (recall that layer 16 is not a copper layer). Accordingly, amended claim 42 and claims 43-49 dependant therefrom avoid the rejections under both §102 and 103.

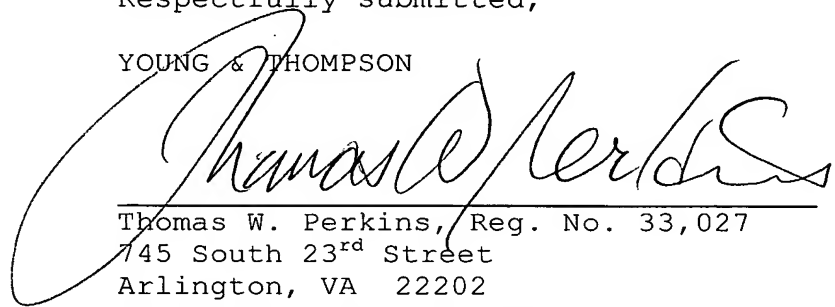
New claim 51 is similar to claim 50 and is allowable for the same reason.

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON

A large, stylized handwritten signature in black ink, appearing to read "Thomas W. Perkins". The signature is written over a horizontal line that separates it from the printed contact information below.

Thomas W. Perkins, Reg. No. 33,027
745 South 23rd Street
Arlington, VA 22202
Telephone (703) 521-2297
Telefax (703) 685-0573
(703) 979-4709

TWP/lk